QCD Agenda 10/04/02

1.   News/announcements   Jay/Joey

Run 2

2.   The path to jet cross sections
      Anwar Bhatti

3.   Tramping the path thus far
      Gene Flanagan

Papers of the Week

- **hep-ph/0209271**; Color-flow decomposition of QCD amplitudes; F. Maltoni, K. Paul, T. Stelzer, S. Willenbrock; We introduce a new color decomposition for multi-parton amplitudes in QCD, free of fundamental-representation matrices and structure constants. This decomposition has a physical interpretation in terms of the flow of color, which makes it ideal for merging with shower Monte-Carlo programs. The color-flow decomposition allows for very efficient evaluation of amplitudes with many quarks and gluons, many times faster than the standard color decomposition based on fundamental-representation matrices. This will increase the speed of event generators for multi-jet processes, which are the principal backgrounds to signals of new physics at colliders.

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Papers of the Week

- **hep-ph/0209297;** Project {\tt SANC} (former {\tt CalcPHEP}): Support of Analytic and Numeric calculations for experiments at Colliders; A. Andonov, D. Bardin, S. Bondarenko, P. Christova, L. Kalinovskaya, G. Nanava, G. Passarino: The project, aimed at the theoretical support of experiments at modern and future accelerators -- TEVATRON, LHC, electron Linear Colliders (TESLA, NLC, CLIC) and muon factories, is presented. Within this project a four-level computer system is being created, which must automatically calculate, at the one-loop precision level the pseudo- and realistic observables (decay rates and event distributions) for more and more complicated processes of elementary particle interaction, using the principle of knowledge storing. It was already used for a recalculation of the EW radiative corrections for Atomic Parity Violation [1] and complete one-loop corrections for the process $e^+ e^-\to t\bar{t}$ [2-4]; for the latter an, agreement up to 11 digits with FeynArts and the other results is found. The version of {\tt SANC} that we describe here is capable of automatically computing the decay rates and the distributions for the decays $Z(H,W)\to f\bar{f}$ in the one-loop approximation.

Papers of the week

- **hep-ph/0210022**; KtJet: A C++ implementation of the Kt clustering algorithm; J. M. Butterworth, J. P. Couchman, B. E. Cox, B. M. Waugh; A C++ implementation of the Kt jet algorithm for high energy particle collisions is presented. The time performance of this implementation is comparable to the widely used Fortran implementation. Identical algorithmic functionality is provided, with a clean and intuitive user interface and additional recombination schemes. A short description of the algorithm and examples of its use are given.

Announcements

- MC workshop at 10 AM today in 1-West; also carried by live streaming
- George Sterman and Al Mueller awarded the Sakurai prize

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E-scale change

At the 02 Oct 2002 Calorimetry Operations and Reconstruction meeting, it was decided that the CEM and CHA energy scales ("SCLs") be shifted:
   1) CEM +3%
   2) CHA +4%
This was done on the hardware database end, and the new calibrations downloaded into the ADMEMs: QIE calibration run 152400.

Further work is to be done on the CHA/WHA: the J/psi based CHA and WHA tower gain shifts (especially the large ones) need to be cross checked aginst min-bias data. These shifts would then be turned into relative gain corrections (LERs), which are to be tested on data taken before 1 Oct 2002. If found to do the right job, then they will be used as the new hardware ADMEM LERs, and for offline LERs in dataset reprocessing.

The 4.8.x physics dataset reprocessing should proceed ahead as scheduled without the the "offline" CHA/WHA LERs. They are not yet ready and Pierre said that datasets can be reprocessed later.

-- Willis

News on Data reprocessing

- Reprocessing using 4.8.3 had begun, but problems with file concatenation and muons were identified.
- Reprocessing will start over again within a few days, as soon as these issues are addressed. Streams B and G will be two of the first to be reprocessed.

  ->> Stream G contains Jets, Min-bias, Zero-bias

- Processing of new data on the production farms is suspended.

- The QCD secondary dataset processing using 4.5.x is halted. Once Stream G is reproceseed with 4.8.x, we will remake the QCD secondary datasets.

- Do the QCD secondary datasets need to be disk-resident anymore?

  Is it adequate to access the data using the data handling system?

  If so, we will probably remove the x5 prescale when selecting JET20 events.